Dr. Brian D. Andresen

Biographical Sketch

Education

- B.S. (1969, Florida State University, Chemistry/Oceanography)
- M.S. Analytical Chemistry (1971 Massachusetts Institute of Technology [MIT])
- Another M.S. Chemical Oceanography (1972, MIT/Woods Hole Oceanographic)
- Ph.D. (1974, Mass Spectrometry and Synthetic Organic Chemistry, MIT)

Work Related

1974-1979	Assistant Professor, University of Florida College of Pharmacy
1979-1983	Professor (Tenured), The Ohio State University, College of Medicine Department of Pharmaceutical Chemistry
1983 to present	Senior Scientist at the Lawrence Livermore National Laboratory, and Director of the Forensic Science Center

Certifications

a) Drug Enforcement Administration (DEA) Laboratory, controlled substance certified (No. PA0183296, 1976-present)
b) Security Clearances (all levels): DOE Q-Cleared (1983-present) and Secret Compartmentalized Information (SCI)-Cleared (1988-present)
c) American Academy of Forensic Sciences — Member
d) American College of Forensic Examiners — Member
e) American Board of Forensic Examiners — Diplomat
f) Ten patents: new designs for analytical chemistry equipment

Research Interests

To use the skills obtained in organic, analytical, and pharmaceutical chemistry and mass spectrometry to characterize important compounds in environmental, biomedical, toxicology, forensics, or related research areas. To design unique analytical equipment to detect environmental pollutants, chemical and biological weapons, high explosives, and unique biological compounds. To develop advanced forensic techniques and instrumentation for unusual sample analysis and to support all types of chemical investigations.

General Research Background

Worked on a variety of projects leading to over 125 publications in reports and scientific journals:

1) The analysis of the Apollo 11-14 moon samples and pseudo-Jupiter soil characterization
2) Identification of accelerants in arson cases and new methods of analysis
3) The identification of the source of underground gasoline from fuel leaks and oil shale by GC-MS utilizing mass spectrometry and new GC-MS software pattern recognition tools
4) The identification of various pollutants in river and ocean water as part of Chemical Oceanography
5) The identification of antibiotics and biologically active compounds from marine plants and animals
6) Fish migration and the chemical characterization of home stream water, pheromones and crustacean communication including sex attractants between male and female lobsters
7) Natural product chemistry for new anti-tumor compounds and the synthesis of mutagenic substances (polycyclic aromatic amines) in over cooked food
8) The identification of chemicals indicative of distinct disease states in children (specifically, Reye's Syndrome, Maple Syrup Urine Disease, and Fetal Alcohol Syndrome (FAS))
9) The characterization of amniotic fluids by GC-MS to identify chemicals indicative of fetal maturity
10) Recent work has related to the identification of chemical and biological warfare agent precursors and their hydrolysis compounds and fugitive chemicals associated with the manufacture of nuclear weapons in environmental samples

11) New field instruments have also been developed, built and tested. These include thin layer chromatography kits with digital camera and automated data analysis capabilities, man portable field deployable gas chromatography-mass spectrometry instruments, time-of-flight (TOF) real-time air analysis equipment, and unique environment field sample collection and transport kits.

Medical, Legal, and Treaty-Related Research Interests

Recent research and development activities have center on the following projects:

Trade Center Bombing – N.Y.
UNABOMB - California
"Toxic Fumes" – Riverside, California, emergency room incident
Reye's Syndrome Biochemistry – Florida and Ohio
Stanford Research Institute Cold Fusion Explosion Investigation - California
Less-Than-Lethal Technologies – California Department of Justice
Field-portable GC-MS instrumentation - California
Methamphetamine Investigation - Hanford, California
Support to the FBI and Customs- Tetrodotoxin Analysis and counterfeit $100
Characterization to determine country of origin through ink and paper analysis
"Angel of Death Investigation" - Glendale, California
Counter-terrorism - Chemical weapons (CW) and narcotics analysis
Organization for the Prohibition of Chemical Weapons (OPCW) certified CW analysis laboratory support and response to international inspections
Bullet fingerprinting - Turlock CA
Fremont Bomber – Fremont, California
Thin Layer Chromatography support to the Army Defense Center

Current R Division Responsibilities

Center leader for the Forensic Science Center. Oversight of forensic and National Security programs in the Forensic Science Center. Liaison with the intelligence communities concerning various forensic investigations worldwide. Support to the Department of Defense Army's Defense Ammunition Center (DAC) and Air Force Technical Application Center (AFTAC). Facilitator between industry, universities, and LLNL to further advanced science and research programs that support advanced technology transfer.